

# **POPULATION STATUS OF FALL-MIGRANT SANDHILL CRANES ALONG THE LOWER COLUMBIA RIVER, 2003 REPORT**

Joseph D. Engler<sup>1</sup>, Eric D. Anderson<sup>1</sup> and Mark A. Stern<sup>2</sup>

<sup>1</sup> U.S. Fish and Wildlife Service, Ridgefield National Wildlife Refuge Complex, Ridgefield, Washington

<sup>2</sup> The Nature Conservancy of Oregon, Portland, Oregon

## **Introduction**

The sandhill crane (*Grus canadensis*) was listed by the State of Washington as an endangered species in 1981 (Washington Administration Code 232-12-014) and by the State of Oregon as sensitive in 1989 (Oregon Department of Fish and Wildlife 1997). It occurs in Washington and Oregon as an uncommon, localized breeding species, an uncommon wintering species, and more commonly as a fall and spring migrant (Stern et al. 2003).

There are three subspecies of sandhill cranes found in Washington and Oregon. The greater sandhill crane (*Grus canadensis tabida*) comprises the breeding subspecies of both states with approximately 21 breeding pairs in Washington (Engler and McFall 2001, USFWS unpubl. data 2003) and 1151 pairs in Oregon (Ivey and Herziger 2000). Nesting occurs primarily in the southeastern Cascade Range of Washington and east of the Cascade Range crest in Oregon. Fall migrant cranes are predominantly of the Canadian (*Grus c. rowani*) and the lesser (*Grus c. canadensis*) sandhill crane subspecies. Migrating sandhill cranes follow two distinct migration routes through Washington. One route follows the Pacific Coast of British Columbia and Washington before diverting up the Columbia River and into the Willamette Valley. These cranes are believed to be predominantly Canadian sandhill cranes. The other route passes through the interior of Washington before being joined by breeding greater sandhill cranes in Oregon; this population consists primarily of lesser sandhill cranes. A more detailed description of these subspecies, their distributions and migration routes can be found in Littlefield and Ivey 2002. Virtually all sandhill cranes nesting in and migrating through the Pacific Northwest winter in the Central Valley of California (Pogson and Lindstedt 1991). In the 1980's approximately 100 sandhill cranes wintered along the lower Columbia River on Sauvie Island and Ridgefield National Wildlife Refuge (NWR). Since then the number of wintering cranes has gradually increased with 800 and 710 cranes tallied respectively in January 1999 and January 2001 during aerial surveys along the lower Columbia River (USFWS unpubl. data). The peak winter count for a single site has been 600 cranes observed in December 1997 on Sauvie Island (H. Nehls, pers. com.).

Since 1991, Ridgefield National Wildlife Refuge and The Nature Conservancy in conjunction with numerous volunteers have surveyed sandhill cranes during the fall migration along the lower Columbia River. Surveys have focused on locating the night roosts utilized by cranes and conducting a census of the individuals utilizing each roost. Night roosts tend to be traditional sites, both seasonally and annually, depending on habitat conditions and water levels. Cranes prefer to roost in undisturbed areas with shallow standing water or on exposed mudflats that

provide an open view of the surrounding area where predators can easily be detected. All known roost sites along the lower Columbia River occur on Ridgefield NWR, on Vancouver Lake (WA), and Sauvie Island Wildlife Management Area (WMA).

## **Methods**

Based on past roost surveys and incidental observations, fall-migrant populations of sandhill cranes are believed to peak within the first two weeks of October along the lower Columbia River. Incidental observations are utilized in late September and early October to assess the general magnitude of the population, from which a survey date is then determined. Survey participants are pre-assigned specific survey locations at known or suspected night roosts. Survey personnel arrive at site and initiate counting at 1700 hours (5 pm); counting continues until nightfall, approximately 1900 hours (7 pm). Cranes that are on-site at survey initiation are counted, as are all cranes that fly into the roost during the 2-hour survey period. Arrival time and individual group size is tallied when feasible. Large spread-out flocks are given a similar arrival time, and size estimations are made if cranes cannot be counted individually. If time allows, the direction from which each crane group arrived is noted. Cranes that subsequently leave the roost are counted and subtracted from the total and their direction of travel is noted to validate their arrival at other roost sites.

In 1995 and 2002, survey totals indicated that the survey likely missed the peak migration period, therefore, a second survey was conducted to validate the original findings.

## **2003 Results**

On 7 October 2003, twelve observers counted 4041 cranes at nine roost sites at Ridgefield NWR, Sturgeon Lake on Sauvie Island WMA, and Vancouver Lake, WA (Table 1). Crane numbers were evenly split between roost sites in Washington (2020) and Oregon (2021). This contrasts with the long term average where 65% of the cranes utilized roost sites in Oregon (Table 2). Overall, the total population estimated in 2003 is consistent with the 5-year average of 3918 cranes estimated in the population since 1998. The current population is approximately 20% higher than the 12-year average of 3342 cranes. The seasonal and annual difference in specific roost site utilization is likely a result of water levels, tidal fluctuations, habitat conditions, the location of food resources, and disturbances (such as waterfowl hunting). The inter-relationship between these various factors and their effect on night roost selection is not understood.

A significant roost shift occurred on the Ridgefield sites in 2003. Bachelor Island where 1245 cranes were counted was more than double any previous count. A number of factors may have contributed to this shift: 1) low water conditions on Canvasback Lake which resulted in extensive mudflats suitable for roosting, 2) proximity of the roost to corn crops, 3) the lack of disturbance from the hunting club which owns Canvasback Lake, as the hunting season had not yet commenced, 4) water levels and extensive vegetation cover on the traditional Campbell Lake roost.

Contrastingly, Campbell Lake has supported the majority of the Washington roosting cranes since surveys began in 1991. This season numbers fell to one-half of the 8-year average (Table 2). Three subsequent tours of Campbell Lake in the following week verified a consistently low count on the lake. Some cranes utilized smaller roosts on the refuge's Carty Unit, and on State owned Vancouver Lake in the Vancouver Lowlands. Use of these alternate sites has been inconsistent over the years.

Date: October 7, 2003

| Location                                       | Observer(s)                     |
|--|---------------------------------|
| Ridgefield NWR, WA                             |                                 |
| Campbell Lake & Post Office Lake               | Joe Engler                      |
| Campbell Lake                                  | Dan Friesz                      |
| Carty Unit, Fowler Lake                        | Eric Anderson                   |
| Bachelor Is., Canvasback, Wigeon, Turtle Lakes | Lauren Ridenour, Jennifer Brown |
| Vancouver Lake, WA                             | Tim Tuttle                      |
| Sauvie Island WMA, OR                          |                                 |
| E/SE side of east lobe, Sturgeon Lake          | Ken Popper, Erin Barnhardt      |
| The Narrows, Sturgeon Lake                     | Eric and Miles Scheuering       |
| The Wash, Sturgeon Lake                        | Mark Stern                      |
| Coon Point, Sturgeon Lake                      | Harry Nehls                     |

During September and October, sandhill cranes on Sauvie Island typically forage on recently harvested private agricultural lands adjacent to the Wildlife Management Area (WMA) during the day, and then fly to roost sites on Sturgeon Lake within the WMA at dusk or before. The exact location of roost sites and number of cranes at specific roost sites varies in response to water levels, which in large part are influenced by tidal pulses.

## Discussion

Incidental observations, foraging patterns, and roost counts, indicate that there is a free interchange of cranes between Washington and Oregon along the river. Factors affecting the daily, seasonal, and annual utilization of individual roost sites can only be surmised given our basic knowledge of the species behavior, foraging, roosting and habitat requirements. Current diurnal surveys (incidental sightings) and one annual night roost survey are inadequate to evaluate overall habitat use and habitat requirements along the lower Columbia River. The daily interplay between foraging and roosting sites cannot be adequately evaluated as all key parameters are not studied.

Sandhill cranes are extremely mobile and may fly up to 12 kilometers or more between known foraging and roosting sites in this region. Cranes tend to utilize night roosts centralized within their activity ranges (Sparling and Krapu 1994). This increases their foraging range and options for locating sufficient food resources throughout the staging and/or winter period. Centralized roost sites that are utilized by many birds may also increase the overall foraging efficiency of the flock, as birds may follow flock members to more productive foraging sites, as resources become locally depleted. Flight paths of roost-bound cranes indicate that birds foraging on Ridgefield NWR, including Bachelor Island, tend to roost on Campbell Lake or Bachelor Island. Cranes utilizing Woodland Bottoms appear to roost on the refuge's Carty Unit or on Campbell Lake. In some cases, cranes foraging on private land east of the refuge roost on Campbell Lake. A small segment of the Vancouver Lowland foraging cranes roost on Vancouver Lake depending on lake conditions. However, the majority of these birds appear to roost on Sauvie Island and Campbell Lake. This latter pattern is variable as waves of cranes flying downriver from Vancouver can be observed to split off toward Campbell Lake or continue toward Sturgeon Lake. Birds foraging on Sauvie Island and in the Scappoose area of Oregon roost around Sturgeon Lake.

The fall roost survey appears to be adequate for assessing long-term, general population trends of this segment of the Pacific Flyway crane population. The inherent problems associated with a one-time annual survey preclude a robust analysis of the data. While data suggests that the major roost sites are known, these surveys may not adequately detect subtle shifts to peripheral roost sites or sporadic shifts due to disturbance or other unknown factors. The variability in the population estimate from year to year is likely a result of the variation in the crane's peak arrival time, as well as the inability of survey crews to survey all potential roosting habitat simultaneously.

Protection of major roost sites is an issue of concern. As mentioned previously, cranes utilize isolated open wetlands for roosting where disturbance is minimal and the ability to detect predators is high. However, subtle changes in habitat conditions such as vegetation growth and water levels can preclude roosting. Average year-round water levels within Campbell Lake appear to be consistently lower since the 1996-97 flood seasons, when Campbell Lake was predominantly non-vegetated, exposed mudflat. Since then, emergent plant species have colonized much of the shallow wetlands and mudflats once utilized by roosting cranes. This growth in vegetation cover when coupled with relatively higher tide levels during the survey week probably precluded significant crane roosting on the lake. The middle and southern portions of the lake are still relatively vegetation-free however water levels may be too deep for roosting. This habitat change in Campbell Lake may account for the shift in roosting to Canvasback Lake though additional comprehensive surveys are needed to delineate the roosting pattern with respect to waterfowl hunt days and variable water conditions. It is expected that if the vegetation trend continues on Campbell Lake, the site may lose its value as roosting habitat. This situation needs to be monitored in future years. Protection of current roost sites is critical as they provide unique features such as proper water depths and isolation that are not located elsewhere along the river.

Cranes forage on a broad array of items during the fall season. They can be observed gleaning and digging for foods, presumably macroinvertebrates and tubers from short grass fields and pastures. They also dig vegetable crops and glean waste grains from agricultural fields. Migrating cranes show a strong affinity for corn crops which they glean from harvested fields. In the

case of the Ridgefield NWR, corn crops are planted and left entirely as wildlife food. Dairy farming and the planting of field corn for silage is a declining practice in Washington. Likewise, shifts in agricultural practices, urbanization, and industrialization all pose significant threats to current known and potential crane foraging habitats in the area. The regional loss of these food resources may ultimately impact the distribution of cranes locally, limit the potential of supporting a wintering crane population, and pose an additional risk to the viability of this flyway segment.

To date, comprehensive standardized winter and spring sandhill crane counts have not been conducted along the lower Columbia River. The complications posed in adequately evaluating data from a one-time survey can only be overcome by conducting multiple surveys during the migration period. Cranes arrive in early September in the region, however, the length of stay and turnover in the transient population is unknown. The current fall roost survey simply gives a snapshot of the fall-migrating crane population. Additional data regarding population dynamics and habitat utilization is required to adequately address the management needs of this species along the lower Columbia River. Age-ratio surveys should also be conducted during the fall season to assess the general productivity of this population, as it would give an additional indicator of the viability of this population.

## **Acknowledgements**

We thank Mark Nebeker and other staff at the Oregon Department of Fish and Wildlife's Sauvie Island Wildlife Management Area for their support and assistance in conducting these surveys.

## **References Cited**

Engler, J.D., and S.M. McFall. 2001. Final report 2001 greater sandhill crane nesting season at Conboy Lake National Wildlife Refuge, Klickitat County, Washington. Unpubl. rep., USDI-Fish and Wildlife Service, Ridgefield NWR, WA. 8 pp.

Ivey, G.L., and C.P. Herziger. 2000. Distribution of greater sandhill crane pairs in Oregon, 1999/00. Oregon Department of Fish and Wildlife Nongame Technical Report # 03-01-00, Portland, OR. 12 pp.

Littlefield, C.D., and G.L. Ivey. 2002. Washington State Recovery Plan for the Sandhill Crane. Washington Department of Fish and Wildlife, Olympia, WA. 71 pp.

Oregon Department of Fish and Wildlife. 1997. Sensitive species. Ore. Dept. of Fish and Wildl., Portland.

Pogson, T.H., and S.M. Lindstedt. 1991. Distribution and abundance of large Sandhill Cranes (*Grus canadensis tabida*) wintering in California's Central Valley. Condor 93: 266-278.

Sparling, D.W., and G.L. Krapu. 1994. Communal roosting and foraging behavior of staging sandhill cranes. Wilson Bulletin 106(1): 62-77.

Stern, M.A., C.D. Littlefield, and G.L. Ivey. 2003. Pp. 198-200 in Birds of Oregon: A General Reference. D.B. Marshall, M.G. Hunter, and A.L. Contreras, Eds. Oregon State Univ. Press, Corvallis, OR.